Published in final edited form as:
Youth Soc. 2012 December ; 44(4): 524–547. doi:10.1177/0044118X11407526.

Suicide Risk at Young Adulthood: Continuities and Discontinuities From Adolescence

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Abstract

Young adult suicide is an important social problem, yet little is known about how risk for young adult suicide develops from earlier life stages. In this study the authors report on 759 young adults who were potential high school dropouts as youth. At both adolescence and young adulthood, measures of suicide risk status and related suicide risk factors are collected. With a two-by-two classification on the basis of suicide risk status at both adolescence and young adulthood, the authors distinguish four mutually exclusive groups reflecting suicide risk at two life stages. Using ANOVA and logistic regression, both adolescent and young adult suicide risk factors are identified, with evidence of similarity between risk factors at adolescence and at young adulthood, for both individual-level and social-context factors. There is also support for both continuity and discontinuity of adolescent suicide risk. Implications for social policy are discussed.

Keywords

suicide risk; young adulthood; adolescence

Suicide remains a leading cause of death for young adults. However, although we have seen increased research focus on adolescent suicide and suicide-related behaviors, less has been directed toward suicide risk among young adults, the 18 to 24 age group, whose suicide death rate consistently exceeds that of adolescents (Centers for Disease Control and Prevention [CDC], 2008). Young adult suicide is somewhat of a puzzle for researchers: Although rates of some adolescent risk behaviors, such as delinquency and fighting, level off or decrease during young adulthood, suicide rates increase during this same period. The suicide death rates for U.S. adolescents and young adults are 7.32 and 12.58 per 100,000, respectively (CDC, 2010), a trend that is consistent with international averages (Heuveline, 2002). These rates imply a suicide vulnerability that persists from adolescence into adulthood, a vulnerability that is often characterized by a range of behaviors such as suicide ideation and attempts, accompanied by depression or anger, all of which pose threats to healthy development and overall well-being (Daniel & Goldston, 2009).

The effects of young adult suicide are far reaching, with profound social as well as personal, family, and community repercussions. From a social perspective, the early deaths and concomitant loss of productivity generate greater societal costs than do deaths at a later age

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Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

(Heuveline, 2002). Understanding the factors that place some young adults at risk for suicide —both the concurrent adult behaviors and the earlier life experiences—is essential for informing policy and programs that will reduce suicide rates and protect young persons, thus contributing to social well-being as well.

One way to understand why suicide risk continues for some young adults and not for others may lie in elucidating the challenges associated with the developmental transition from adolescence to young adulthood and in identifying how earlier vulnerabilities may predispose a young person to difficulties with such challenges. This transition is typified by pervasive shifts in social contexts and connections, coupled with reduced structure and social support. Failures in negotiating these shifts have serious implications for young adult mental health (Galambos, Barker, & Krahn, 2006; Schulenberg, Bryant, & O'Malley, 2004), as has mental health for assuming adult roles (Hofstra, Van Der Ende, & Verhulst, 2002). During the transition to adulthood, conditions that might foster social integration and regulation (Durkheim, 1897/1951) are changing, leaving many young adults without a blueprint for assuming adult roles. These shifts can be especially challenging for youth with histories of suicide vulnerability at earlier life stages, including emotional distress or suicide behaviors (Fergusson, Horwood, Ridder, & Beautrais, 2005; Lewinsohn, Rohde, Seeley, & Baldwin, 2001). Youth at risk for suicide in adolescence, especially those who were not well integrated socially, or who lack the skills to engage new social networks, may carry their vulnerability forward to young adulthood. From a social integration perspective, the presence of individual and social risk factors that place an individual at greatest risk for loss of connection to social networks and roles would be those most likely to predict the persistence of suicide risk from one developmental period to another.

In this research, suicide risk status at adolescence and adulthood is determined by suicide behaviors and depression, which are related to both death by suicide and to each other (Gould & Kramer, 2001; Thompson & Eggert, 1999). We track the course of suicide risk across a life transition by examining suicide risk status, as well as related individual and social suicide risk factors, for a group of young adults who had been identified with school problems (low grades, credits, and/or attendance) on the basis of school records as youth. School problems are associated with an increased likelihood of other health and social problems, including suicide behaviors, emotional distress (depression, anger and anxiety), substance use, and family disconnections (Gould & Kramer, 2001; King et al., 2001). Studies of developmental continuity from adolescence to adulthood suggest that those at risk during one period are more likely to be at risk during a subsequent period as compared to those who were never at risk (Schulenberg, Maggs, & O'Malley, 2003; Schulenberg & Zarrett, 2006). Nonetheless, a hallmark of young adulthood is the discontinuity that may occur with the introduction of new contexts and goals that—though they may exacerbate old risks—may also ameliorate past emotional problems and offer opportunities to assume positive trajectories (Schulenberg et al., 2003).

We examine how suicide risk status, in particular continued risk status from adolescence, is associated with overall adult psychosocial adaptation and whether a suicide risk status that continues into adulthood is predicted by risk factors that were present in adolescence. In the next section we summarize what is known about the presence and continuity of suicide risk factors from adolescence to early adulthood and their potential for conveying suicide risk from one developmental period to the next.

Background

Identified suicide risk factors for adolescent suicide fall into two general categories: individual-level and social context. The individual factors include direct indicators of

suicide risk such as thoughts and attempts, as well as emotional distress, and indirect suicide risk factors such as high-risk behaviors and substance use. The related social-context factors are those associated with the spheres of family, peer, and school, captured in measures of family conflict and disengagement, social disconnection, and school problems. Adolescents at risk for suicide presumably carry their vulnerability forward within this constellation of behaviors that characterize suicide risk (King et al., 2001; Resnick et al., 1997), any of which may impede successful assumption of adult roles. In this section we summarize the research about the developmental course of key factors associated with suicide risk and their potential for predicting, and conveying, risk from one developmental period to the next.

Individual-Level Risk Factors

The key predictor, and focus of several longitudinal studies, of young adult suicide risk is suicide behaviors in adolescence, especially suicide attempts (Fergusson et al., 2005; Fergusson, Woodward, & Horwood, 2000; Johnson et al., 2002). Furthermore, a history of past suicide attempts has been found to moderate the relationship between current negative life events and young adult suicidal response to those events (Joiner & Rudd, 2000). This suggests that former experiences of suicide behavior make it more likely that there will be a suicidal response to a contemporaneous precipitating event. Suicide behaviors, however, are rarely the sole predictor of subsequent risk; studies have also identified a number of other potential pathways to later suicide risk (Fergusson et al., 2005, 2000).

Adolescent emotional distress, defined by depression, anxiety, and anger, is also related to both adolescent (King et al., 2001) and adult suicide behaviors (Lewinsohn et al., 2001), as adult emotional distress is related to adult suicide behavior (Harrington et al., 2006). Furthermore, within a developmental trend toward improved emotion management by young adulthood, variation in emotional distress at the individual level increases (Schulenberg & Zarrett, 2006); in other words, some young adults experience higher levels of distress than before. Some increase in distress is explained by social-emotional history; problems in adolescence with depression, anxiety, and aggression, particularly if severe, appear to increase the probability of increased emotional distress (Fergusson et al., 2000; Hofstra et al., 2002; Schulenberg & Zarrett, 2006), as well as the likelihood that distress will influence a greater number of life areas.

Risky behavior in adolescence has implications for suicide risk. High substance use, for instance, is a consistent correlate of suicide risk (Davis et al., 2006), increasing the likelihood of, and possibly exacerbating the relationships between, depression, suicide ideation, and attempts (Chassin, Pitts, & DeLucia, 1999; Newcomb & Bentler, 1988). Substance use in adolescence is also related to later adult problems (Chassin et al., 1999; Trim, Meehan, King, & Chassin, 2007), including binge drinking or the use of hard drugs, which can undermine young adult emotional, physical, and economic well-being (Chassin et al., 1999). Other risky behaviors related to adolescent suicidal behaviors include illegal activities, fighting and life-threatening activities, legal problems, and incarceration (King et al., 2001). Such activities can influence adult well-being and lead to subsequent social marginalization that increases vulnerability to suicide in adulthood (Fergusson et al., 2000; Langhinrichsen-Rohling, Arata, Bowers, O'Brien, & Morgan, 2004).

Social-Context Risk Factors

Social integration within family or community reduces risk of suicide (Durkheim, 1897/1951; Maimon, Browning, & Brooks-Gunn, 2010; Thorlindsson & Bjarnason, 1998). Family support at adolescence, commonly conceptualized as parental involvement; family connection (Borowsky, Ireland, & Resnick, 2001), warmth, and support (Maimon et al., 2010); and family or parent-teen time spent together (Resnick et al., 1997) is "protective"

for the risk of suicide and co-occurring problem behaviors (Maimon et al., 2010). The perception of family availability indexes a general sense of having support from and connection to important others. The positive effects of perceived family presence and support have been observed for adolescent suicide-related outcomes (Resnick et al., 1997) and prospectively from adolescent parent-child relationship to young adult risk (Roberts & Bengston, 1993). Alternatively, spending large amounts of time alone or in isolation in adolescence has been associated with risk of suicide both in adolescence (Mazza & Eggert, 2001) and later in adulthood (Johnson et al., 2002).

Schools represent another context where social connections and integration vary for adolescents. Problems in high school with academic progress, attendance, and school-belonging consistently have been related to concurrent adolescent mental health outcomes, including suicide risk (Resnick et al., 1997; Thompson & Eggert, 1999). Findings related to the contribution of school problems to future (adult) adjustment, though not always consistent (Galambos et al., 2006), generally show long-term negative impacts (McCarty et al., 2008).

Shifting Contexts in Young Adulthood

By young adulthood the locus of achievement and belonging has shifted from adolescent to adult arenas, and to the adoption of adult roles, and success is defined by indicators of adulthood, such as autonomy, intimacy, postsecondary education, employment, marriage, and parenthood. Despite changes, relationships with parents in young adulthood remain important for psychological adjustment (Galambos et al., 2006; Heights, 2002), especially in terms of fluctuations in depression and well-being. Achievement of adult status is typically in flux during early adulthood and difficult to predict by age (Schulenberg & Zarrett, 2006). The demands of assuming adult roles and responsibilities, along with successes and failures, have implications for young adult general well-being and emotional health outcomes, including but not limited to capacity for stress management, self-esteem development, and depression (Galambos et al., 2006; Schulenberg & Zarrett, 2006). Of specific interest is the extent to which suicide risk influences successful integration into these new roles.

Study Hypotheses

In this study we examine the impact of risk factors in adolescence and young adulthood that are pertinent to young adult suicide risk status. We examine the concomitant risk and protective factors associated with young adult suicide risk in general, as well as the suicide risk factors associated with suicide risk status that has continued, or has not continued, from adolescence. Then, we explore which adolescent risk factors, known to be associated with adolescent suicide risk, predict suicide risk status in young adulthood. Suicide risk status is determined by a self-report screen (SRS, see Measures section), administered at both adolescence and young adulthood. We describe young adult suicide risk by classifying participants into four categories that include both current and past risk status: no observed risk, reduced risk, emerged risk, and persisted risk. The theory and research on the correlates of suicide risk behavior in adolescence, reviewed above, and research on the continuity of those risk behaviors into adulthood led us to hypothesize that young adults will show emotional and behavioral sequelae of adolescent difficulties. We generated three hypotheses that are examined in this paper.

Hypothesis 1: Young adults at suicide risk compared to those not at risk will show significantly greater emotional distress, substance use, high-risk behaviors, and lower functional status (i.e., adult equivalents of adolescent family and school disconnection).

Hypothesis 2: Youth who carry suicide risk forward from adolescence to adulthood (persisted risk) will have greater social-emotional and functional status problems (e.g.,

assuming adult social roles) than those with newly identified (emerged risk) or no suicide risk status (no observed risk or reduced risk) in young adulthood.

Hypothesis 3: Past adolescent risk factors will predict suicide risk status in young adulthood.

Methods

The Data

Data are from two comprehensive survey questionnaires, one administered in adolescence (mean age = 16) and one in young adulthood (mean age = 21), as part of a longitudinal research study conducted by the *Reconnecting Youth (RY) Prevention Research Program*. This longitudinal study was conducted in the Seattle, WA, and Santa Fe, NM, metropolitan regions between the years 1995 and 2005. The adolescent study was conducted from 1995 to 1999, and the young adult study from 2000 to 2005. The initial study sample included 1,150 high school youth with potential for high school failure or dropout. For this initial sample selection, a pool of students *with potential for school failure or dropout* (using an algorithm based on grades, credits, absences, suspensions) was identified from school district databases (Eggert, Thompson, Herting, & Nicholas, 1994). Youth were randomly selected from the pool and invited to participate in the study. In both high school and young adulthood, participants completed questionnaires, which included the Screen for Suicide Risk (SRS) used to assess suicide risk status (Thompson & Eggert, 1999).

The present study is based on a sample of 759 young adults (66% of original sample) who agreed to participate in a follow-up study when contacted in young adulthood. Of the baseline high school sample ($N = 1,150$), 142 (12%) refused participation and 229 (20%) were not located. This retention rate is considered acceptable for longitudinal research with vulnerable populations (Sussman, Dent, & Stacy, 2002). Participants were compared to nonparticipants on adolescent baseline suicide risk level and risk factors, and there were no significant differences for any variable. The ages, grades, sex, and living situation for the young adult sample did not differ significantly from the original high school study sample of 1,150. There were ethnic differences ($\chi^2 = 19$, $p < .005$). The adult participants were more likely to be White (40% vs. 33%) and of mixed-ethnicity (10% vs. 6%) and less likely to be Asian-American (8% vs. 13%) or Hispanic (18% vs. 23%) than those who did not participate as adults.

Participants

Of 759 young adults participating in the current study, 356 (47%) were female, and 403 (53%) were male. In high school, participants ranged in age from 14 to 19 (with two exceptions). Sixty-two percent were in 10th and 11th grade, 20% in 9th grade, and 18% in 12th grade. Race and ethnicity representation was 42% White, 18% Hispanic, 15% African American, 8% Asian, 7% Native American, and 8% mixed-ethnicity. Forty one percent of students reported living with both biological parents, with 33% living in single-parent households. In young adulthood, the mean age was 21.4 years; the average lag time between high school interview and the young adult interview was 5.4 years. Neither direct participant contacts nor public record reviews revealed any deaths by suicide.

Measures

Measures came from the RY High School Questionnaire (HSQ; Eggert, Herting, & Thompson, 1995) administered to adolescents in-person at the high schools and from the RY Young Adult Questionnaire administered by telephone during young adulthood. Telephone

interviewing is a cost-effective technology that has been documented to be comparable in reliability and validity to in-person interviews (Ellen et al., 2002).

The HSQ measures a broad range of adolescent risk and protective factors. The measures include both general self-assessments and measures derived from discrete behavior counts. All scales were assessed using standard reliability and validity tests. Unless otherwise indicated, items were measured using a Likert-type scale, ranging from 0 to 6. Measures of time spent in particular activities (e.g., alone) were based on behavioral counts at different blocks of time during the day and week; scale scores ranged from 0 to 16.

The Young Adult Questionnaire is a direct extension of the HSQ. The instrument incorporates items relevant to the broader social-context and life-course transitions/events common in young adulthood (e.g., employment, marriage, parenthood, military service, postsecondary education, incarceration, hospitalization). Key dimensions measured in the Young Adult Questionnaire are essentially identical to the HSQ scales as described below.

Study variables—Risk factors measured during the initial high school contact were identified from selected domains of risk and life processes associated with suicide vulnerability: emotional distress, risky behaviors (e.g., substance use), school problems, and family availability. Scales show good reliability and are adapted from scales used in prior research studies (Eggert et al., 1994; Hooven, Herting, & Snedker, 2010). Suicide behaviors were measured using seven indicators (based on Likert-like frequency scales) that included suicidal thoughts, notes, threats, and attempts (α = .89 in adolescence, α = .74 in young adulthood). Measures of depression (α = .88, α = .84), anxiety (α = .82, α = .78), and anger (α = .72 for both adolescence and adulthood) were used as indicators of emotional distress. *Risky behaviors* included a measure of drug involvement (α = .82, α = .76, respectively) that assesses problems of drug use control and negative consequences related to drug use and abuse. The measure of high-risk behaviors (α = .82, α = .62, respectively) captured the frequency of physical fights, thefts, and legal or disciplinary problems. *School problems* was measured by four indicators of school-related difficulties, including problems with school attendance, school achievement, and a single-item estimate of likelihood of dropping out of school. Perceived *family togetherness* was assessed by three measures of family connection: family available to talk to and do things with and family knowing how well teen is doing (α = .86). Time alone was obtained from ratings of actual time spent alone, the latter indexing teen's daily connection to family and others (Mazza & Eggert, 2001).

In young adulthood, identical measures were available for emotional distress and risky behaviors, with more developmentally appropriate measures developed for the school and family contexts in the young adulthood questionnaire. Young adult functional status was measured with indicators of adult roles and developmental tasks, including self-reports of employment, salary, financial independence, educational progress, and domestic partner status (Newcomb & Bentler, 1988). For this study, responses to the young adult functional status questions (e.g., full-time work, post–high school education, marital status) were dichotomized (*yes* = 1 and *no* = 0).

We include sociodemographics as controls. Suicide risk behaviors at adolescence and young adulthood are known to be related to sex (female respondents being more likely to report depression and suicide behaviors), age (early high school years show higher rates of behaviors than later years), and race/ethnicity (Hispanics and Native Americans more likely, and African Americans less likely than Whites, to report suicide behavior; CDC, 2008).

The Suicide Risk Screen—The Suicide Risk Screen (SRS; Thompson & Eggert, 1999) was used to determine suicide risk status in adolescence and adulthood. Suicide-risk-status

criteria were the same at both time points, defined by empirically based criteria that included five indicators of suicidal behaviors (e.g., thoughts, threats, prior attempts) along with depression. The SRS has established validity and reliability and has been used with more than 6,000 youth and 3,000 adults in a series of descriptive instrumentation and clinical studies.

Data Analysis

Following preliminary analyses, cases were categorized into four groups of continued risk (see Table 1), based on the suicide risk status in adolescence and in young adulthood. Participants who did not screen in at either adolescence or young adulthood were classified as no observed risk; those who screened in at adolescence, but not young adulthood were classified as reduced risk; those who screened in at young adulthood, but did not screen in at adolescence, were classified as emerged risk; and those who screened in both in adolescence and young adulthood were classified as persisted risk.

We conducted analyses linked to each of the three study hypotheses. First, we examined broadly, looking at young adult risk factors associated with being at suicide risk versus not at suicide risk in adulthood (Hypothesis 1). Specifically, we compared those categorized as at risk in young adulthood (Table 1; emerged-risk and persisted-risk groups) with those not at risk (no-observed-risk and reduced-risk groups). Second, using ANOVA, we compared the four categories of risk. We tested for group differences in emotional distress and risky behavior with measures similar to those collected in adolescence and compared the proportion of young adults who had attained specific functional statuses (Hypothesis 2). Planned comparisons were conducted using Bonferroni adjustment for multiple comparisons. Third, we used logistic regression to examine the independent predictive effects of identified adolescent risk factor variables on adult suicide risk status while controlling for age, sex, and race/ethnicity (Hypothesis 3).

Results

The Preliminary Analyses

In adolescence, 157 (20.69%) youth met the suicide-risk-status criteria (see Table 1); a higher proportion of adolescent females met this criteria compared to males ($p <. 01$), with fewer African Americans ($p <. 05$) meeting the screening criteria; these patterns are consistent with national statistics (CDC, 2008). In young adulthood, 86 young adults met the suicide-risk-status criteria (Table 1), 45 of whom had also been at suicide risk (SR) as youth. Thus, among young adults, those who had been at adolescent suicide risk were significantly more likely to be at suicide risk in young adulthood ($\chi^2 = 59.18$, $p < .001$), compared to those who had not been at risk. Compared to those in the non–suicide-risk category, suicide-risk young adults ($n = 673$) were slightly older (mean 0.5 years older; $p < .05$) and more likely to report being mixed-race ($p < .05$). No other significant differences were observed between suicide-risk and non–suicide-risk young adults.

Young Adult Suicide Risk Status and Concurrent Risk Factors and Functional Status (Hypothesis 1)

Young adult suicide risk status was, by definition, associated with significantly higher levels of suicidal behaviors ($p < .001$) and depression ($p < .001$; Table 2a). Although not part of the screen (SRS) that determined suicide risk status, concurrent anxiety and anger were also significantly higher (both $p < .001$) for adults at suicide risk. In other words, adults at suicide risk had higher suicide behaviors as well as higher depression, anger, anxiety than did non–suicide-risk adults. Young adults at suicide risk also reported higher drug involvement ($p < .010$) and risky behaviors ($p < .001$).

In young adulthood, study participants were engaged in a variety of adult pursuits, with 540 young adults working (323 full-time) and 340 in postsecondary educational institutions with about half attending community colleges. Among these young adults, 353 (46.5%) still lived with their parents, 51 (6.72%) were married, and 129 (17%) had children. Those young adults who were at suicide risk were less likely than those not at risk to work full-time ($p < .001$) or pursue post–high school education ($p < .05$); adult suicide risk status, however, was unrelated to their living situation, partner status, or having children.

Risk Categories and Young Adult Suicide Risk Factors and Functional Status (Hypothesis 2)

A total of 561 participants were in the no-observed-risk group, 112 in reduced risk, 41 in emerged risk, and 45 in persisted risk. ANOVA comparisons conducted for adult risk-factor levels among the four suicide risk classifications are presented in Table 2a.

Suicide behavior and emotional distress—The influence of risk history is apparent for suicide behaviors and emotional distress. For instance, the persisted-risk group (IV) showed higher adult suicidal behavior than the emerged-risk group (II), although both share adult suicide risk status; indeed persisted risk has the highest level of direct suicide behaviors among the other three groups. The reduced-risk group (III) showed more depression and anxiety compared to the no-observed-risk group (I), although both share non–suicide-risk status as adults, and both groups reported significantly less depression and anxiety than the two adult suicide risk groups.

Risky behaviors—Adult drug use and high-risk behavior were significantly lower for the no-observed-risk and reduced-risk groups than the emerged-risk group, but not lower than the persisted-risk group; drug involvement was higher for the emerged-risk group than for any of the other three groups. The persisted-risk group did not differ significantly from the no-observed-risk or reduced-risk groups (both non–suicide-risk young adults) with respect to their current (young adult) drug use or drug/alcohol use problems.

Functional status—Youth in the emerged-risk group, but not in the persisted-risk group, reported less post–high school education and greater likelihood of being engaged in neither work nor school (an indicator of young adult disconnection), than either the no-observed-risk or the reduced-risk group (both non–suicide-risk young adults; see Table 2b). Persisted risk had highest use of public assistance, significantly higher than no observed risk. Again, there were no significant group differences for living situation, having children, or being married.

Summary—Young adults in the persisted-risk group reported the highest levels of adult suicide behaviors—ideation, threats, or attempts—significantly higher than all other categories. Although both emerged-risk and persisted-risk groups met adult suicide-risk-status criteria, those whose risk continued from adolescence (persisted risk) compared to those newly identified (emerged risk) reported significantly more adult suicide behaviors. Suicidal behaviors, however, did not differ significantly between those in no-observed-risk and reduced-risk groups suggesting there was no lingering elevation of suicide behaviors for those who managed to reduce their suicide risk by young adulthood. Young adult depression and anxiety, however, remained significantly higher for the reduced-risk versus no-observed-risk adults, indicating that those at risk in high school, though not currently at risk, retained higher levels of depression and anxiety than those never at suicide risk. On the other hand, across all indicators of emotional distress, the reduced-risk young adults showed less emotional distress than did those in emerged-risk or persisted-risk groups. Adults in the

reduced-risk and no-observed-risk groups (non–suicide-risk young adults) did not differ from each other on other risk factors or markers of young adult functional status.

Adolescent Risk Factors and Prediction of Young Adult Suicide Risk (Hypothesis 3)

Prediction of suicide risk—Logistic regression (Table 3, Column 1) was used to examine the effects of adolescent-measured risk factors on future suicide risk status. Group differences in adolescent risk factors among the four suicide risk classifications were used to select variables to be entered into the equation. In general, suicide behaviors in adolescence predicted young adult suicide risk. With adolescent suicidal behaviors and demographic variables (age, sex, and race/ethnicity) entered into the equation first, emotional distress, school problems, family togetherness, and time alone remained significant predictors of young adult suicide risk status. Demographics, except for mixed-race, were not significant predictors. The findings are notable because these variables predict even when controlling for adolescent suicide behaviors, which was itself a significant predictor, (Exp(B) = 1.42, $p < .01$).

Differences in adolescent predictors were explored separately for those who were ($n = 157$) and were not ($n = 602$) at suicide risk in adolescence. For youth *not* at risk during adolescence, predictors of later young adult suicide risk (i.e., those classified as either emerged risk or no observed risk) included emotional distress, school problems, and time spent alone, controlling for suicidal behaviors and demographic variables—only age was significant (Exp(B) = .71, $p < .05$). For youth at suicide risk during adolescence, family togetherness (Exp(B) = .78, $p < .05$) was the key predictor of suicide risk persisting into adulthood (i.e., youth classified as persisted risk and reduced risk), controlling for suicidal behavior (Exp(B) = 1.33, $p < .10$). The only demographic variable that predicted future risk status was mixed-ethnicity, which predicted greater risk when the total group (risk and nonrisk) was examined.

Discussion

This investigation of suicide risk examined factors associated with suicide risk status at both adolescence and young adulthood in order to understand the course of suicide risk from youth to young adulthood. Study results speak to the issue of continuity and discontinuity of suicide risk at the transition to young adulthood. Whereas risk status at both periods is defined by suicide behavior (e.g., thoughts, attempts) and depression, both of which are in the SRS screening criteria, we see that young adults with suicide risk status also share the adolescent propensity to report higher levels of other individual and social risk factors such as anger, anxiety, risky behaviors, and social disconnection (Hypothesis 1), with some associations differentially linked to whether suicide risk is new versus continuous (Hypothesis 2). Finally, there is support for a continuity of adolescent suicide risk in young adulthood that is predicted from adolescent suicide behaviors, emotional distress, and factors related to family, social, and school disconnection (Hypothesis 3).

Young Adults and Suicide Risk

Important differences related to suicide risk status were apparent for young adults when we considered past suicide risk status as well as present, as shown by group comparisons for the *four* suicide-risk-status categories. The categories reveal different risk factor associations for suicide risk that had continued versus suicide risk that had not. For instance, adult substance use is higher for emerged risk than for both adult nonrisk categories, but that is not true for persisted risk. And adult high-risk behavior is lower for no observed risk than for the other categories, but that is not true for reduced risk. In particular, we hypothesized that those in the persisted-risk group would show more difficulties with young adult adjustment than

would those in other categories. If risk persisted from adolescence into adulthood, the consequences would be expected to extend to a broad range of social-emotional function. This hypothesis appears to be partially supported. The persisted-risk group showed the highest level of all categories for suicide behaviors but was not higher than emerged-risk group in traits such as depression, anxiety, or anger. Although the emerged-risk group reported equally high levels of emotional distress as the persisted-risk group, their level of suicide behaviors was lower. The persisted-risk group's continued presence of suicide behavior suggests issues related to problem-solving deficits in addition to emotional distress. Suicide behaviors can become entrenched and overused, becoming less related to the external stressor and more likely to be a spontaneous response to stress in general (Joiner et al., 2005; Joiner & Rudd, 2000). This somewhat automatic response makes the behaviors no less dangerous; indeed, by becoming desensitized to suicide behavior one's risk of suicide is increased (Joiner et al., 2005).

Adults in the emerged-risk category, newer to risk, did not fare better in most ways than those in the persisted-risk category. Problems with substance use distinguished this group of adults from the other three. They report suffering more negative consequences and difficulty controlling their substance use than do the other three groups—findings that have strong implications for eventual increased suicide risk related to social disconnection and economic marginalization (Bogart, Collins, Ellickson, & Klein, 2007). Different processes are likely to be involved for the persisted versus newly emerged suicide risk groups that involve their responses to stress/distress: one group responding with a propensity to suicide behaviors, the other with substance use and high-risk behavior.

There were also fewer differences than expected between the emerged-risk and persisted-risk categories for functional status tasks, given the lengthier exposure to risk experienced by the persisted-risk group. Whereas the emerged-risk group reported greater likelihood of "doing nothing", reflecting a lack of integration or connection (indexed by being neither engaged in school nor work), the only functional status indicators specifically related to the persisted-risk category were marital status and current reliance (24% of the group) on public assistance (reflecting less financial independence). Although many in the persisted-risk group are partnered, unlike the other groups no one in this group was married. As adults, both emerged-risk and persisted-risk groups showed lower levels of full-time employment and post–high school progress than did their nonrisk counterparts. However, no differences related to suicide risk were apparent for living situation, having a partner, being in school, or having children. As is common in "emerging adulthood," these developmental areas typically remain in "flux" well into the 20s. It might be too early to see effects of risk in these areas, as these young adults are still within the "window of attainment" for markers of adulthood (education, family, and children). Furthermore, effects by group may be obscured by cases of "pseudomaturity," the achievement by some of adult social markers unusually early in adulthood (such as parenthood), which are known to relate to a number of later negative outcomes for young adults.

The news about the discontinuity of suicide risk from adolescence to young adulthood is encouraging. First, though more of those identified at suicide risk in adolescence, compared to those who were not, would later be at adult risk (29% vs. 7% respectively), the majority of at-risk adolescents were no longer categorized "at-risk" by adulthood. Those with reduced suicide risk also showed few effects of early suicide risk status related to either young adult psychosocial or role functioning. The exceptions were adult depression and anxiety, which remained significantly higher for those in the reduced-risk group compared to those in no-observed-risk group, the other nonrisk adults. However, depression and anxiety, though higher for the reduced-risk group versus the no-observed-risk group, were nonetheless

significantly lower compared to the emerged-risk and persisted-risk categories, as was anger.

Continuity of Risk From Adolescence to Young Adulthood

To understand why risk is continuous for some young adults and discontinuous for others we examined adolescent risk factors that predicted young adult status (Hypothesis 3). In general, adult risk was predicted by several indicators of social disconnection (school problems, family togetherness, and time spent alone), conservatively controlling for prior suicide behaviors and emotional distress. Adolescent risk factors that predicted continuity and discontinuity of suicide risk status were different for those who had not been at prior risk and those who had. For non–suicide-risk adolescents, the factors that predicted discontinuity of their non–suicide-risk status were time alone, school problems, and emotional distress. Those youth who were not at risk in adolescence and who would maintain their nonrisk status tended to report spending less time alone, having fewer school problems and having lower levels of emotional distress. For young adults considered at suicide risk in high school, it is their perception of family togetherness that predicts future risk. Those who reported higher levels of family availability and time together showed discontinuity in risk status by adulthood.

Connection to family, measured by adolescent ratings of family availability, is particularly relevant to at-risk youth, who may, because of the very distress they are experiencing, be the most difficult for families to connect with. The significance of family availability, while controlling for adolescent suicide risk behaviors, is unlike findings from other longitudinal studies (e.g., Fergusson et al., 2005; Lewinsohn, Rohde, & Seeley, 1994) where prior suicide behavior accounted for most of the variance in current suicidality. Current research shows that positive relations and connections with one's family of origin, important during adolescence, continues to be important for young adult well-being (Heights, 2002) and continued social support from both family and peers aids in the transition to adulthood (Galambos et al., 2006). The findings are also consistent with Durkheim's (1897/1951) classic observation of the relationship of social integration to suicide, and which is supported by recent research identifying the primacy of family integration (over parental regulation) for youth suicide risk (Thorlindsson & Bjarnason, 1998) and the overall importance of family attachment in reducing suicide risk (Maimon et al., 2010). This research provides new evidence not only for the importance, but also for the long-term effects of social disconnection in adolescence.

In this study, school problems (problems with grades, attendance, progress, likelihood of dropping out) predicted young adult suicide risk, particularly among young adults who were not at suicide risk as youth. This suggests that conventional school connection and integration is likewise relevant to suicide risk. It is noteworthy that this held true for a sample of youth who were all having school problems. Doing even worse in school than one's peers who are also struggling with school may not only be discouraging in adolescence but may presage difficulties in managing similar adult tasks such as postsecondary schooling or full-time work, diminishing abilities to assume adult roles.

Strengths and Limitations

This study has many strengths, including a large, diverse sample; a longitudinal design; tested, valid screening tools; and a comprehensive measurement range of risk and protective factor predictor variables. A large sample of high school youth were systematically screened for risk of high school drop out using a tested algorithm. Comparable, if not identical, measures and suicide screening tools were used at the two time-points. This interpretation of study results also takes several study limitations into account. Of 1,150 original participants,

this study relied on data from 759 young adults who completed the follow-up assessment. However, no significant differences on any variables of interest were found between participants versus nonparticipants, except for lower retention of Hispanic and Asian participants (neither of which was related to continued risk). Mixed-race respondents showed elevated suicide risk, consistent with prior research, highlighting an important underdeveloped area for future research.

While limited to the Pacific Northwest and New Mexico, there is no reason to believe that sample location significantly influences the relationship between adolescent risk status and young adult risk status; thus, implications are not limited to the geographic region from which the data are drawn. We do not know whether or to what degree the assessments of suicide risk, and subsequent follow-ups with resource contacts required by protocol, might be implicated in the risk reductions we observe from adolescence to adulthood. Also, this current study relies on self-report data that may have influenced results. Although there are some limitations to studies based on self-report data, the approach is common, particularly for examining topics related to risk behaviors and internal states; moreover, comparisons of youth reports of family and school have been associated with reports gathered by other methods (Hennan, Dornbusch, Herron, & Herting, 1997).

Implications

From a societal perspective, young adult suicide is a costly yet potentially preventable occurrence, pointing to a societal responsibility best addressed by advancing policies toward suicide prevention (Daniel & Goldston, 2009; Gould & Kramer, 2001) that focus on both individual and social factors. Key findings from this investigation are that young adult suicide risk is related to a host of other adult risks. Furthermore, the likelihood of developing suicide risk behaviors as an adult, whether one is at suicide risk as a youth or not, can be predicted from adolescent reports of behaviors and situations, some of which may not appear particularly worrisome at the time. Several appropriate targets for prevention were identified, including adolescent social-context factors, such as family and school settings, and youth connections to those settings that are predictive of later adult suicide risk.

There are several specific implications from these findings. Screening of distressed or disengaged youth for social-emotional well-being, which includes suicide behaviors, appears warranted as it provides information that has important short- and long-term implications. Findings for family involvement, which are salient for youth with potential of high school dropout in general and relate to long-term outcomes for youth at suicide risk, suggest that interventions for suicide-vulnerable youth should target family and school support and connection, and parental monitoring of youth withdrawal and time alone. Finally, adolescent isolation and time alone has been cited as a key factor in suicide risk and risk persistence (Gould & Kramer, 2001; Johnson et al., 2002) and is extended by this research. All together, these findings support focused attention on how the standard high school schedule, along with parental work schedules, might contribute to adolescent isolation, and on reconsidering strategies to reduce time alone for vulnerable youth.

Summary

This examination of four categories of continued risk provides a nuanced view of the links between adolescent and young adult suicide risk. Although measures of social disconnection were implicated in the continuity of suicide risk in general, the salient predictors of later risk were different for those at former suicide risk than for those who were not. At the same time, there were differences in psychosocial and functional status for adults whose risk had continued versus adults whose risk had not. Although the purpose of this study is to provide

a general examination of suicide risk at young adulthood, within this examination we find a pattern of results that are both provocative and compelling and which warrant further study.

Acknowledgments

Funding

The author(s) received the following financial support for the research, authorship, and/or publication of this article: This research was supported by R01 NR 03550 from the National Institute on Nursing Research. The authors acknowledge and express their appreciation for the many participants who enriched their understanding of the transition from adolescence and young adulthood.

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Table 1

Classification of Cases by Suicide Risk Status in Adolescence and Young Adulthood

	Young adulthood risk status		
Adolescence risk status	**Not at suicide risk**	**At suicide risk**	***N***
Not at suicide risk	I: no observed risk, $n = 561$	II: emerged risk, $n = 41$	602
At suicide risk	III: reduced risk, $n = 112$	IV: persisted risk, $n = 45$	157
n	673	86	759

Table 2a

Means and Standard Deviations for Young Adult Risk Factors by Suicide Risk Status

Young adult risk factors	Group I, no observed risk (*n* = 561)	Group II, emerged risk (*n* = 41)	Group III, reduced risk (*n* = 112)	Group IV, persisted risk (*n* = 45)	*F* statistic across the four groups	Significant differences
Emotional distress						
Suicidal behavior	0.04 (0.25)	0.79 (0.68)	0.05 (0.12)	1.08 (0.96)	167.22****	All pairs differ, except I vs. III
Depression	0.91 (0.82)	2.66 (1.06)	1.21 (0.79)	2.61 (1.35)	97.23****	All pairs differ, except II vs. IV
Anxiety	1.26 (1.02)	2.77 (1.08)	1.55 (1.12)	2.78 (1.22)	51.99****	All pairs differ, except II vs. IV
Anger	1.23 (0.99)	2.10 (1.19)	1.42 (1.04)	2.17 (1.01)	19.85****	All pairs differ, except I vs. III & II vs. IV
Risky behavior						
Alcohol/drug use	5.82 (5.37)	8.27 (6.16)	5.88 (5.13)	6.64 (5.63)	2.84**	I < II & II > III *
Drug involvement	0.66 (0.99)	1.32 (1.41)	0.65 (1.00)	0.71 (0.97)	5.42****	II > I, III, IV
High-risk behaviors	0.49 (0.66)	0.91 (0.93)	0.54 (0.71)	0.80 (0.84)	6.82****	I < II, IV; II > III

* $p < .10$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

Table 2b

Group proportions for indicators of young adult functional status by suicide risk status.

Young adult functional status	Group I, no observed risk (*n* = 561)	Group II, emerged risk (*n* = 41)	Group III, reduced risk (*n* = 112)	Group IV, persisted risk |(*n* = 45)	*F* statistic across the four groups	Significant differences
Employed	0.72 (405)	0.54 (22)	0.77 (86)	0.60 (27)	3.66**	III > II
Employed full-time	0.43 (243)	0.24 (10)	0.52 (58)	0.27 (12)	4.8***	III > II, IV
Post–high school education	0.59 (333)	0.36 (15)	0.60 (67)	0.44 (20)	3.87***	I > II & II < III*
Not in school and not working	0.13 (75)	0.32 (13)	0.11 (12)	0.22 (10)	4.67***	II > I, III
Public assistance	0.10 (55)	0.12 (5)	0.14 (16)	0.24 (11)	3.12**	IV > I

Note: Dichotomous variables for functional status were coded as yes = 1, no = 0. Scores represent proportion of cases answering “yes.” Sub-sample (all yes’s) sizes in parentheses.

* $p < .10$.

** $p < .05$.

*** $p <. 01$.

**** $p < .001$.

Table 3

Odds Ratio (Exp B) and Standard Errors From Multivariate Logistic Regression Predicting Adult Suicide Risk Status for Total Sample and Subsamples by Risk Status in Adolescence

	Risk status in adolescence		
	Total sample (*N* = 759)	**Not at suicide risk (i.e., Group I vs. II, *n* = 602)**	**At suicide risk (i.e., Group III vs. IV, *n* = 157)**
Adolescent predictors	**Exp(B)**	**Exp(B)**	**Exp(B)**
Suicidal behavior	1.42 (0.13)***	3.26 (0.96)	1.33 (0.15)*
Emotional distress	1.34 (0.14)**	1.58 (0.22)**	*ns*
Drug involvement	*ns*	—	—
High-risk behavior	*ns*	—	—
School problems	1.33 (0.12)**	1.55 (0.17)***	*ns*
Perceived family togetherness	0.82 (0.07)***	*ns*	0.78 (0.12)**
Time spent alone	1.11 (0.03)****	1.18 (0.04)****	*ns*

Note: *ns* = nonsignificant. Logistic regression controlled for age, sex, and race/ethnicity. Standard errors reported in parentheses.

* $p < .10$.

** $p < .05$.

*** $p <. 01$.

**** $p < .001$.